

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1797

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.).

The reference of Schmidt et al. discloses a waste gas treatment system (See Figure 1) that includes a directional gas flow device (2) having a valve, at least one gas inlet (1) and at least two gas outlets (See Figure 1) wherein the valve is adapted to control the waste gas to flow toward one of the at least two gas outlets (See page 6). The system includes a biological treatment system (3) including a top, a bottom and at least one biological reactor (24) wherein the top and bottom connect to the at least two gas outlets and microorganisms are capable of being immobilized on support material (24) (See page 8).

Claim 24 differs by reciting that the waste gas treatment system includes a dust and grease filter device connected to the at least one gas inlet.

The reference of Suereth discloses that it is well known in the biofilter art to provide the inlet stream with a dust filter (14).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the primary reference with a dust filter device on the gas inlet for the known and predicable result of providing a means recognized in the art for filtering dust from a waste gas stream so as to prevent clogging of the biofilter media.

In the absence of further positively recited structure with respect to the claimed “dust and filter device” the Examiner is of the position that the dust filter of the reference of Suereth is structurally capable of also filtering grease. Note the filter disclosed in the instant specification filters both dust and grease based on mesh size. As a result, a device with a mesh size capable of

Art Unit: 1797

filtering dust, such as that disclosed by Suereth, would inherently be capable of also filtering grease from a gas stream.

If not, the reference of Barbosa et al. is cited as evidence that it is known in the art of waste gas treatment to provide the system with a dust and grease filtering device (See page 347, section 1.4.1).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the primary reference with a device for filtering dust and grease for the known and expected result of removing dust and grease from the gas stream prior to contacting the blower device and/or biofiltration device.

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.), either combination taken further in view of Walker (US 4,421,534).

The combination of the references of Schmidt et al. and Suereth and alternatively further in view of Barbosa et al. has been discussed above.

Claim 23 differs by reciting that the device further includes "a bioaerosol removal device connecting to the biological treatment system".

The reference of Walker discloses that it is known in the biofilter art to provide the exit stream of a biological treatment system (13) with a bioaerosol removal device (32,41).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with a removal device as suggested by the

Art Unit: 1797

reference of Walker for the known and predicable result of treating the exit gas as is conventional in the art for removing the odor associated with the exit gas of a biological treatment system (See column 2, line 45, to column 3, line 15).

6. Claims 1-7, 10-18, 22 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.), either combination taken further in view of Walker (US 4,421,534) and Unterman (US 5,494,574).

The combination of the references of Schmidt et al. and Suereth and alternatively further in view of Barbosa et al. has been discussed above.

Claim 1 differs by reciting that the device further includes a microorganism selected from the list recited in claim 1.

The reference of Unterman discloses that it is conventional in the art to provide a biotrickle system with a variety of microorganisms including *pseudomonas sp.* (See column 4, lines 32-54).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to employ at least *pseudomonas sp.* in the biotrickle system of the modified primary reference for the known and expected result of employing an art recognized microorganism for treating a waste gas stream. It is clearly within the purview of one having ordinary skill in the art to determine the optimal microorganism to employ based merely on the source of the waste gas to be treated.

Art Unit: 1797

With respect to claims 2-4 and 34, in the absence of a showing of criticality and/or unexpected results, it would have been well within the purview of one having ordinary skill in the art to determine the optimum design of the dust filter based on considerations such as the source of the waste gas and economics while maintaining the required function of the filter to remove dust from the waste gas stream prior to introducing the gas into the biological treatment system.

With respect to claims 5-7, the reference of Schmidt discloses that valve (2) is electrically switchable. Additionally, while not preferred, it would have been obvious to one of ordinary skill in the art to manually operate the valve if required, for example, to override the system.

With respect to claims 10-15, the reference of Walker discloses that the removal device (32,41) includes liquid and particulate matter (See column 2, line 45, to column 3, line 15).

With respect to claims 16-18, the reference of Schmidt discloses the use of a synthetic polymer support material (24) which is capable of having microorganisms attached thereto by covalent bonding and/or adsorption.

With respect to claim 22, in the absence of a showing of criticality and/or unexpected results, it would have been obvious to one of ordinary skill in the art to determine the optimum placement of the ventilation fan within the system while maintaining the required gas flow through the treatment system.

7. Claims 2-4 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.), either combination taken further in view

Art Unit: 1797

of Walker (US 4,421,534) and Unterman (US 5,494,574) and taken further in view of Geier-Henninger (DE 4207233).

The combination of the references of Schmidt et al. and Suereth and alternatively further in view of Barbosa et al. and Walker and Unterman has been discussed above.

With respect to the design of the filter device encompassed by claims 2-4 and 34, the reference of Geier-Henninger discloses a filter device that is known in the art for filtering grease and other particles from an exhaust gas which includes the use of filler bodies (See the English language abstract).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to employ the filter device of the reference of Geier-Henninger in the system of the modified primary reference for the known and expected result of providing an alternative means recognized in the art to achieve the same result while providing the advantages associated with the use of a filter design disclosed by Geier-Henninger.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.), either combination taken further in view of Walker (US 4,421,534) and Unterman (US 5,494,574) and taken further in view of Kato (JP 2-31816).

The combination of the references of Schmidt et al. and Suereth and alternatively further in view of Barbosa et al. and Walker and Unterman has been discussed above.

While the modified primary reference includes a device for treating the exit gas from the biological treatment system, the reference does not disclose the use of a thermal device.

Art Unit: 1797

The reference of Kato discloses that it is known in the art to employ a heat source (1) to deodorize and/or sterilize a gas stream (See the English language abstract).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the exit of the biological treatment system with a treatment device as suggested by the reference of Kato for the known and predictable result of providing a means recognized in the art for treating a gas stream so as to remove odor and/or microorganisms from the gas stream.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.), either combination taken further in view of Walker (US 4,421,534) and Unterman (US 5,494,574) and taken further in view of Kimura et al.(JP 2002-224207).

The combination of the references of Schmidt et al. and Suereth and alternatively further in view of Barbosa et al. and Walker and Unterman has been discussed above.

While the modified primary reference includes a device for treating the exit gas from the biological treatment system, the reference does not disclose the use of an UV device.

The reference of Kimura et al. discloses that it is known in the art to employ an UV source (4) to deodorize and/or sterilize a gas stream (See the English language abstract).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the exit of the biological treatment system with a treatment device as suggested by the reference of Kimura et al. for the known and predictable result of providing a means recognized

Art Unit: 1797

in the art for treating a gas stream so as to remove odor and/or microorganisms from the gas stream.

10. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) or alternatively further in view of Barbosa et al. (Reviews in Enviro. Sci. & Biotech.), either combination taken further in view of Walker (US 4,421,534) and Unterman (US 5,494,574) and taken further in view of Coleman (CA 2,186,202).

The combination of the references of Schmidt et al. and Suereth and alternatively further in view of Barbosa et al. and Walker and Unterman has been discussed above.

While the modified primary reference includes a biological treatment device that includes a microorganism support material, claims 19-21 differ by reciting the use of support material that includes encapsulation and/or crosslinking.

The reference of Coleman discloses that it is conventional in the art of biofiltration to employ to immobilize microorganisms on a support material using encapsulation and/or crosslinking (See page 4, line 13, to page 5, line 13).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the support material suggested by the reference of Coleman for the known and predicable result of providing an alternative means recognized in the art to achieve the same result, support of microorganisms within a biofiltration device.

### ***Response to Arguments***



Art Unit: 1797

11. With respect to the rejection of Claim 24 under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167), Applicants argue (See pages 1-2 of the remarks filed 7/11/2008) that the combination of references does not meet the amended claim language of claim 24 because the references do not disclose a “dust and grease filtering device”.

In response, Applicants’ comments are not found to be persuasive because the Examiner is of the position that the filtering device of Suereth is inherently capable of filtering grease for the reasons set forth above in the rejection of claim 24. Additionally, if not, the Examiner has cited the reference of Barbosa et al. to evidence that it is known in the art to provide a biofiltration system for was gas with a "dust and grease filtering device".

12. With respect to the rejection of Claims 1-7, 10-18, 22 and 23 under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) taken further in view of Walker (US 4,421,534), Applicants argue (See pages 2-3 of the remarks filed 7/11/2008) that none of the combined references discloses or suggest "a dust and grease filter device" nor a microorganism from the list set forth in claim 1.

In response, the Examiner maintains that the combination of the references of Schmidt et al. with Suereth alone or further in view of Barbosa et al. teaches and/or suggests the use of "a dust and grease filter device” for the same reasons as set forth above with respect to claim 24. With respect to the list of microorganism, the reference of Unterman has been cited to address the obviousness of this newly recited claim limitation.

Art Unit: 1797

With respect to claim 23, Applicants argue (See page 3 of the remarks filed 7/11/2008) that none of the combined references discloses or suggest "a dust and grease filter device".

In response, the Examiner maintains that the combination of the references of Schmidt et al. with Suereth alone or further in view of Barbosa et al. teaches and/or suggests the use of "a dust and grease filter device" for the same reasons as set forth above with respect to claim 24.

With respect to claim 34, Applicants argue (See page 7 of the remarks filed 7/11/2008) that claim 34 was not address with specificity in the Office Action.

In response, the Examiner is of the position that the claim was address in the office action, albeit, being referred to as "claim 35" (See page 5, first paragraph, of the non-final office action dated 1/11/2008). Since the application was only filed with 34 claims, it is obvious that reference to claim 35 was a typographical error. Especially when reviewing the contents of the claim linked with the Examiner's comments on page 5 of the office action.

13. With respect to the rejection of Claim 8 under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) and Walker (US 4,421,534) taken further in view of Kato (JP 2-31816), Applicants argue (See pages 3-5 of the remarks filed 7/11/2008) that none of the combined references discloses or suggest "a dust and grease filter device" nor a microorganism from the list set forth in claim 1.

In response, the Examiner maintains that the combination of the references of Schmidt et al. with Suereth alone or further in view of Barbosa et al. teaches and/or suggests the use of "a dust and grease filter device" for the same reasons as set forth above with respect to claim 24.

Art Unit: 1797

With respect to the list of microorganism, the reference of Unterman has been cited to address the obviousness of this newly recited claim limitation.

14. With respect to the rejection of Claim 9 under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) and Walker (US 4,421,534) taken further in view of Kimura et al.(JP 2002-224207), Applicants argue (See pages 5-6 of the remarks filed 7/11/2008) that none of the combined references discloses or suggest "a dust and grease filter device" nor a microorganism from the list set forth in claim 1.

In response, the Examiner maintains that the combination of the references of Schmidt et al. with Suereth alone or further in view of Barbosa et al. teaches and/or suggests the use of "a dust and grease filter device" for the same reasons as set forth above with respect to claim 24. With respect to the list of microorganism, the reference of Unterman has been cited to address the obviousness of this newly recited claim limitation.

15. With respect to the rejection of Claims 19-21 under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al.(CA 2,035,512) in view of Suereth (DE 4102167) and Walker (US 4,421,534) taken further in view of Coleman (CA 2,186,202), Applicants argue (See pages 6-7 of the remarks filed 7/11/2008) that none of the combined references discloses or suggest "a dust and grease filter device" nor a microorganism from the list set forth in claim 1.

In response, the Examiner maintains that the combination of the references of Schmidt et al. with Suereth alone or further in view of Barbosa et al. teaches and/or suggests the use of "a dust and grease filter device" for the same reasons as set forth above with respect to claim 24.

Art Unit: 1797

With respect to the list of microorganism, the reference of Unterman has been cited to address the obviousness of this newly recited claim limitation.

***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM H. BEISNER whose telephone number is (571)272-1269. The examiner can normally be reached on Tues. to Fri. and alt. Mon. from 6:15am to 3:45pm.

Art Unit: 1797

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/William H. Beisner/  
Primary Examiner  
Art Unit 1797**

WHB